

Different Semantics for Different Syntax: Relative Clauses in Korean*

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1 Introduction

C.-T. James Huang (1984) cites Ross (1982) as he borrows the contrast between 'hot' and 'cool' from McLuhan's (1964) 'hot-cool' division of the media. According to McLuhan's division, a medium is 'hot' if the communication process requires little or no audience participation, and 'cool', otherwise. Thus, a TV commercial is hot in that one usually requires no considerable effort on the viewers' part, whereas a philosophical writing such as Russell's *An Inquiry into Meaning and Truth* is cool, since a successful communication between the writer and its readers will not be carried out without readers' deep contemplation. Ross extends this analogy to classifying languages in terms of their explicitness in expression of anaphoric elements. Thus, when it comes to zero pronouns, English and French are hot, whereas Chinese, Korean, and Japanese are cool. For example, (1) shows that a sentence is not grammatical with zero pronouns in English that could be recovered from the context, while (2) shows that Korean allows these sentences. In this way Korean is more sensitive to and dependent on the context for interpretations than English is. Therefore Korean is cool, and English is hot.

- (1) Speaker A: Did John see Mary yesterday?
 Speaker B: a. Yes, he saw her.
 b. *Yes, *e* saw her.
 c. *Yes, he saw *e*.
 d. *Yes, *e* saw *e*.
- (2) Speaker A: John-i ecey Mary-lul poassni?
 John-nom yesterday Mary-acc saw
 'Did John see Mary yesterday?'
 Speaker B: a. Ung, ku-ka kunye-lul poasse.
 yes he-nom she-acc saw
 'Yes, he saw her.'
 b. Ung, *e* kunye-lul poasse.
 'Yes, [he] saw her.'
 c. Ung, *e e* poasse.
 'Yes, [he] saw [her].'

I observe that there is another manifestation of the hot-cool contrast between the two groups of languages in relative clause (RC) constructions. For example, English requires that there be tight syntactic dependencies between an RC and its head noun in that there should be some unrealized element in an RC which would be present otherwise. Hence, while (3) is a standard example of RC construction in English, where an argument of the verb *loved* is not realized, (4a) is

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ungrammatical, where there is no unrealized element in the RC. However, the so-called cool languages are non-syntactic in this regard and allow examples like (4).

- (3) a spy that I loved
- (4) a. *the sound that a baby cries
(intended:) the sound that characterizes a baby's crying'
- b. ai-ka wun UN soli (Korean)
baby-nom cry REL sound
'the sound that characterizes a baby's crying'
- c. xiaohai ku de shengyin (Mandarin Chinese)
child cry REL sound
- d. akatyan-ga naku koe (Japanese)
baby-nom cry voice

On the other hand, semanticists in general seem to have assumed, despite various syntactic types of RC constructions in the world, that the semantic value of a restrictive RC construction like (3) is more or less the same across languages (cf. Quine (1960), Montague (1973), Partee (1975), Bach and Cooper (1978), and Cooper (1983)).¹ PTQ's translation rule (5) will give (3') for *spy that I loved* in (3). If we apply the same rule to (4a), we will get (4a'). But this will not give the reading we intend, because there is no connection between the sound and a baby's crying. In fact, (4a') denotes any set of sounds as long as there is a baby crying in the given world of evaluation. Chomsky (1982) suggests that an RC construction like (4a) is filtered out in the syntax of LF because of a Universal Principle preventing a vacuous quantification.

- (5) T3: If $\zeta \in P_{CN}$, $\phi \in P_C$, and ζ, ϕ translate into ζ', ϕ' , respectively,
then $F_{3,n}(\zeta, \phi)$ translates into $\lambda x_n [\zeta'(x_n) \ \& \ \phi']$.

(3') $\lambda x [\text{spy}'(x) \ \& \ \text{loved}'(I, x)]$

(4a') $\lambda x [\text{sound}'(x) \ \& \ \text{cry}'(a\text{-baby}')]]$

However, if we adopt this popular PTQ-style semantics for RC constructions and assume Chomsky's suggestion in the analysis of the cool languages, two problems arise. First, the semantic value (4a') is not appropriate for (4b,c,d). Second, (4b-d) will be ruled out, even though they are acceptable.

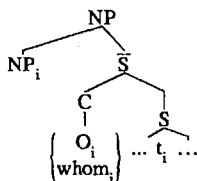
In this paper, thus, I will argue against the popular assumption that an RC universally requires an unrealized element. Moreover, I will propose a semantic rule that can appropriately capture the relationship between the head noun and its RC in the cool languages.

It has been generally the case in the Government-Binding literature that a relative clause construction like (6) is analyzed in one of the following two ways (cf. Chomsky (1982, 1986)):

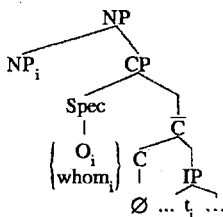
¹ There has been a disagreement among them concerning whether Nom-S or NP-S is an adequate analysis of constituency in RCs. The point here is that most approaches seem to agree that $\lambda Q \exists x [\text{spy}'(x) \ \& \ \text{loved}'(I, x) \ \& \ Q(x)]$ is the semantic value for a *spy that I loved*.

- (6) a man (whom) John met

a.



b.



Both analyses propose a Wh-movement of the empty operator or the relative pronoun, leaving behind a Wh-trace. The coindexation between the head noun and the relative pronoun or the operator is carried out by the rule of predication (Williams 1980). In a nontransformational approach, Pollard and Sag (in press) do not employ movement of a relative pronoun or an operator. Instead of positing a trace in the RC, they capture the intuitive notion of an implicit 'gap' in RCs by waiving a valence requirement.

Kuno (1973) discusses Japanese RCs and suggests that a relative clause in a topic prominent language like Japanese has a gap in the topic position. In fact, Kuno's work was done in the Standard Theory framework (cf. Chomsky 1965). Kuno's analysis adapted to Chomsky's (1986) framework would be close to (6b). I will call this approach the Topic-gap analysis. Tagashira (1972) adopts Kuno's approach in her discussion of Korean RCs.

If all the above approaches to RCs are considered 'gapped' in one way or another, this paper is an attempt to show that a 'gapless' approach is more adequate in explaining Korean RCs from both syntactic and semantic points of view. By gapless, I mean that we don't posit any kind of traces in the RC or structure sharing between a head noun or the relative pronoun and its modifying clause. The only empty category that I posit is a null pronominal, i.e. *pro*. I will provide a nontransformational analysis within the Head-driven Phrase Structure Grammar (HPSG) framework (Pollard and Sag 1987, in press). While it is conceivable that this approach may equally explain RC constructions of other cool languages such as Chinese and Japanese, I will limit the discussion to Korean.

2 Basic Data

To start the discussion, let me first introduce some basic facts about RCs in Korean. I will occasionally use an underscore to indicate a putative gap for the time being for the sake of clarity. Considering (7), we can see three characteristics of Korean RCs here:

- (7) John-i [na-lul salangha-n UN] yeca-lul] mannassee.²
 John-nom I-acc love-pres REL woman-acc met
 'John met a woman who loves me.'

² There are phonologically-driven rules governing forms of the markers: the topic marker *nun*, the nominative marker *ka*, and the accusative marker *lul* are realized after a closed syllable as *un*, *i*, and *ul*, respectively.

First, there is no relative pronoun corresponding to English *who* in Korean. Second, there is a relativizer *UN* which relates the RC to the head noun.³

Another fact worth mentioning is that Korean is a pro-drop language. Not only can there be a phonologically empty subject (i.e. subject *pro*) possible, but object *pro* is also possible.⁴ Consequently, ambiguities arise in (8). *Pro* being construed as referring to the speaker here, the sentence (8) can mean (8a) or (8b), depending upon whether *pro* is the subject or the object. (8a) corresponds to (8'a) and (8b) to (8'b).

- (8) [___ — salanghan UN] yeca-ka ttenassci.
 love REL woman-nom left
 a. 'A woman who loves me left.'
 b. 'A woman who I love left.'
- (8') a. [___ pro salanghan UN] yeca-ka ttenassci.
 b. [pro ___ salanghan UN] yeca-ka ttenassci.

Also, it is not required that the relativized clause contain an argument position related to the head noun. As (9) shows, the relative clause has neither an overt subject nor an overt object, even though the head verb in the clause *kitali* 'to await' subcategorizes for an object as well as a subject. What the head noun in the RC does seem to be related to is a locative adjunct.⁵ Consequently, both of the argument positions can be presumed to be occupied by *pro*'s. So, a more detailed analysis of (9) will be something like (9').

- (9) [___ — ssulssulhakey kitali UN] tapang
 lonely awaited REL coffeeshop
 'A coffeeshop in which someone waited lonely for somebody'
- (9') [pro₁ pro₂ ssulssulhakey kitali UN] tapang

Moreover, subadjacency appears to be generally violated in Korean RCs. (10) shows cases of extractions out of a subject NP; (11), cases of extractions out of an object NP; and (12), cases of extractions out of an adjunct. Nevertheless, all of them are acceptable.

- (10) a. [[___ ipko issn UN] yangpok-i telep UN] sinsa
 wearing is REL suit-nom dirty REL gentleman
 'the gentleman such that the suit that he is wearing is dirty'

³ Tense markers in RCs are merged with the relativizer, resulting in *un*, *ul*, and *nun* in most of the cases. Therefore, I will use the capital *UN* to refer only to the relativizer.

⁴ Chinese is a language very close to Korean in this regard. Huang (1982) claims that an empty object is a variable, never *pro*, bound by the topic. His claim is based on a conclusion that the relation between a topic and an empty object is subject to the Strong Cross-over Condition, which is taken to be a diagnostic for variable binding. Xu (1986) disputes this claim. Korean data are along the line with Xu's claim in Chinese. For example, (i) is good:

(i) John_i-un, ecey caki-ka cipcep Mary-ka e_i pelyessta-ko kopaykha_iyssta.
 John-top yesterday self-nom directly Mary-nom deserted-comp confessed
 'John, he himself confessed yesterday that Mary dumped him.'

Without going further to prove it, I will assume that Korean has object *pro*.

⁵ Obviously there are two other readings: (i) the coffeeshop awaited someone and (ii) someone awaited the coffeeshop. In these cases the head noun is construed as the subject in (i) or the object in (ii). But I am not concerned with these readings here.

- b. [[__ ilhepli UN] salam-i na-lul chachao UN] cikye
lost REL person-nom I-acc visited REL watch
'the watch such that the person that lost it visited me'
- (11) a. [Nay-ka ecey [__ manna-l UN] sikan-ul icepli UN] yeca
I-nom yesterday meet-fut REL time-acc forgot REL woman
'the woman such that yesterday I forgot the time that I would meet her'
- b. [Nay-ka [ecey __ sa UN] kes-ul hwuhoyhan UN] computer
I-nom yesterday bought REL thing-acc regret REL computer
'the computer such that I regret that I bought it yesterday'
- (12) a. [[__ cwuk-ese] motwu-ka sulphaha UN] salam
die-because all-nom grieved REL person
'the person such that all grieved because he died'
- b. [[__ cwuk-unhwuey] motwu-ka kuliwehan UN] yeca
die-after all-nom miss REL woman
'the woman that all miss after she died'

A more striking characteristic of Korean RCs is that there is a class of RCs which seem to lack even a putative gap. For example, the RCs in (13) are not interpretable as containing a gap which is related to the head noun.

- (13) a. [ai-ka wun UN] soli
baby-nom cry REL sound
(literally: 'the sound such that a baby cries')
'the sound that characterizes a baby's crying'
- b. [wuli-ka achim-ul mek UN] ccikkeki
we-nom breakfast-acc ate REL leftover
(literally: 'the leftovers such that we had breakfast')
'the leftovers that came from our having breakfast'
- c. [John-i kom-ul cwuki UN] sichey
John-nom bear-acc killed REL corpse
(literally: 'the corpse such that John killed the bear')
'the corpse that came from John's killing the bear'
- d. [thayphwung-i cinaka UN] huncek
typhoon-nom passed.by REL debris
(literally: 'the debris such that a typhoon passed by')
'the debris that resulted from a typhoon's passing'
- e. [komwu than UN] naymsay
rubber burn REL smell
(literally: 'the smell such that rubber is burning')
'the smell that characterizes burning of rubber'

Even though the heads of the RCs in (13) are characterized by the RCs, the way they are related is not by coindexing. Instead, what distinguishes (13) from other RCs is that the head nouns are related characteristically with the eventualities that the RCs describe. I will continue to refer to RCs as in (13) as 'Korean-type' RCs. Also RCs which are not Korean-type will be called 'English-type' RCs.

3 Topic-gap Analysis

It is standard to distinguish between English-style and Chinese-style topics (cf. Chafe 1976), since the Chinese-style topic doesn't require the comment clause to have an element which is syntactically related to it. Korean appears to belong to the Chinese-style topic languages in this respect. The contrast is apparent between (14) and (15) that the gap is syntactically related to the topic in (14) but there is nothing in the matrix clause of (15) in which could be related to the topic. However, it seems that there are Korean sentences with an English-style topic as well. For example, (14') can be analyzed in the same way as (14).

(14) This book, John liked ____.

(15) Yen-kuk-un John-i Shakespeare-lul coahay.
 play-Top John-nom Shakespeare-acc like
 'As for plays, John likes Shakespeare.'

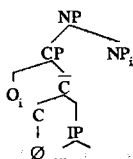
(14') I chayk-un, John-i ____ coahaysse.
 this book-top John-nom liked
 'This book, John liked'

This led many, e.g. Kuno (1973), Xu and Langendoen (1985), and H. Yoon (1987), to propose a topic node in Japanese, Chinese, and Korean respectively. This topic node is considered to be base-generated in cases like (15) (cf. Kuno (1973) for Japanese and Yoon (1987) for Korean).

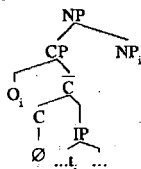
Kuno (1973) maintains that there is a correlation between topicalization and relativization and then he proposes a Topic-gap analysis. His analysis is basically the form of (16), in which there is a dependency between the topic and the head noun.⁶

⁶ His analysis is different from the standard approaches in GB in that an NP in the topic node identical to the head NP is deleted. In order to make the discussion more relevant for the current theoretical framework, let us assume that topics possess the same position as wh-moved elements and also that Kuno really meant structures like (ia) for a Korean-type RC like (13), and (ib) for an English-type RC like (7) above:

(i) a.

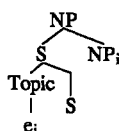


b.



In (ia) there is no trace in IP which would be coindexed with the head noun or the empty operator. The empty operator O_i is base-generated and coindexed with the head noun. The analysis in (ib) is popular in the current GB literature for non-wh relatives (cf. Recall that Korean and Japanese don't have a relative pronoun. Therefore the empty operator O_i is the only option under Spec of CP.) In (ib) the operator which is in IP in the D-structure moves to Spec of CP in the S-structure.

(16)



Kuno's claim is based on the following four observations.

First, some case markers are deletable if they are in the topic position (N.B. nominative and accusative markers are deleted obligatorily in topics). This results in a form of NP+topic marker. One observation is that a relativization appears to be correlated to the deletability of a case marker in the topic. In other words, Kuno claims that the deletability of a case marker in the topic position is a necessary and sufficient condition for relativization. The sentences (17) and (18) illustrate this point. (17b) is the topicalized counterpart of (17a). The sentence (17c) is good and the same as (17b) except that the latter is without the locative case marker *ey* in the topic. The RC in (17d) is also good and presumably 'relativized' from (17a).

- (17) a. Yak osipmyeng-i ku tongney-ey wasse.
 approx 50.people-nom the village-to came
 'About 50 people came to the village.'
- b. Ku tongney-ey -nun, yak osipmyeng-i wasse.
 -top
 'To that village, about 50 people came.'
- c. Ku tongney-Ø -nun, yak osipmyeng-i wasse.
 -top
 'As for that village, about 50 people came.'
- d. [yak osipmyeng-i o UN] tongney
 approx. 50.people-nom came REL village
 'the village which about 50 people came to'

But in (18) the case marker in the topic of (18b) is not deletable, as shown in (18c). This is correlated with the ungrammaticality of (18d). This correlation is the basis of the claim that (17d) and (18d) are derived from (17c) and (18c) respectively.

- (18) a. Mary-ka John-kwa kasse.
 Mary-nom John-with went
- b. John-kwa-nun, Mary-ka kasse.
 John-with-top Mary-nom went
 'With John, Mary went.'
- c. *John-Ø-un, Mary-ka kasse.
- d. *[Mary-ka ka UN] salam
 Mary-nom went REL person
 '(int.) the person with whom Mary went'

Second, both constructions allow what appear to be resumptive pronouns in the same environments. This is shown in (19) and (20). (19a) is a case of topicalization from an adjunct and (19b) is its corresponding relative clause construction. The resumptive pronoun *ku* 'he' is allowed in these cases. Similarly, (20a) is a case of topicalization out of a complex NP and (20b) is its corresponding relative clause construction.

- (19) a. Ku salam-un, ku-ka cwuk-ese motwu-ka sulphehaysse.
 the person-top he-nom die-because all-nom grieved
 'That person, all grieved because he died.'
- b. [ku-ka cwuk-ese motwu-ka sulpheha UN] salam;
 'the person such that all grieved because he died'
- (20) a. Ku sinsa-nun, [ku-ka ipko issn UN] yangpok-i telewue.
 the gentleman-top he-nom wearing is REL suit-nom is.dirty
 'As for the gentleman, the suit that he is wearing is dirty.'
- b. [[ku-ka ipko issn UN] yangpok-i telep UN] sinsa;
 'the gentleman such that the suit that he is wearing is dirty'

Third, Kuno maintains that there are some cases in which subadjacency is not observed in topicalization, involving elements in adjunct clauses, complex noun phrases, and sentential subjects. He also claims that there are some relative clauses which don't observe subadjacency. His claim is that even though it is hard to define the environments where subadjacency is violated, violations occur exactly in the same environments for both constructions.⁷ The sentences (19') and (20') are exactly like (19) and (20) except that the latter have resumptive pronouns. An adjunct clause is involved in (19'), and a complex phrase and a sentential subject are involved in (20'):

- (19') a. Ku salam-un, ____ cwuk-ese motwu-ka sulphehaysse.
 the person-top die-because all-nom grieved
 'That person, all grieved because he died.'
- b. [____ cwuk-ese motwu-ka sulpheha UN] salam
 die-because all-nom grieved REL person
 'the person such that all grieved because he died.'
- (20') a. Ku sinsa-nun, [____ ipko issn UN] yangpok-i telewue.
 the gentleman-nom wearing is REL suit-nom is.dirty
 'As for the gentleman, the suit that he is wearing is dirty.'
- b. [[____ ipko issn UN] yangpok-i telep UN] sinsa
 wearing is REL suit-nom is.dirty REL gentleman
 'the gentleman such that the suit that he is wearing is dirty'

Fourth, a topic sentence without a gap in the comment clause has the corresponding RC as shown in (21) below. (21a) is a Chinese-style topic sentence as discussed in (15) above, in that there is no syntactic gap in the comment clause that can be related to the topic. Likewise, there is no gap in the corresponding RC in (21b).⁸

- (21) a. Ku nala-nun, nay-ka swuto-lul pangmwunhayssta.
 the nation-top I-nom capital-acc visited
 'As for the country, I visited the capital'
- b. [nay-ka swuto-lul pangmwunha UN] nala
 I-nom capital-acc visited REL nation
 'the country such that I visited the capital'

⁷ In Korean, however, relative clauses seem to be generally not subject to subadjacency as shown in (10-12) above. See Na and Huck (1993) for the claim that a nonsyntactic account should explain seemingly subadjacency effects in some Korean sentences. I will return to this point in Section 5.1.

⁸ In fact, these examples don't show that one is related to the other construction. Rather, what they show is that a topic is relativizable and that there is a topic gap in these examples.

Plausible as this analysis may appear based on the proposed parallel between topicalization and relativization, it also brings some empirical problems with it. The next section will provide arguments against Kuno and propose an analysis which involves no gap in a RC, not even a topic gap.

4 Problems with Kuno's Approach

It is undeniable that there are some similarities between a topic sentence and an RC in Korean. However, when we consider other facts of RCs below, these similarities do not seem to be strong enough to support Kuno's proposal that they are syntactically related to each other, let alone that one is derived from the other. The similarities may well be due to some overlap in their functions as Na (1986) suggests. I will provide four arguments against the proposed correlation between topic sentences and RCs in this section.⁹

First, there are some RCs for which the corresponding NP-*nun* sentences do not exist, as Kuno himself admits for Japanese examples similar to (22) and (23). For example, according to Kuno's proposal, (22c) is unexpected. Comparing (22b) and (22c) with (18c) and (18d), we would predict that (22c) should be bad. But (22c) is a perfect RC. (23a,b,c) show the same effect as in (22).

- (22) a Ku khal-lo-nun, Mary-ka John-ul ccilesse.
 the knife-with-top Mary-nom John-acc stabbed
 'With the knife, Mary stabbed John.'
 b. *Ku khal-Ø-un, Mary-ka John-ul ccilesse.
 c. [Mary-ka John-ul ccilu UN] khal
 Mary-nom John-acc stabbed REL knife
 'the knife with which Mary stabbed John'
- (23) a. Ku yenghwa-lo-nun, John-i kyelsekhaysse.
 the movie-with-top John-nom was.absent
 'Because of the movie, John was absent.'
 b. *Ku yenghwa-Ø-nun, John-i kyelsekhaysse.
 c. [John-i kyelsekha UN] yenghwa
 John-nom was.absent REL movie
 'the movie for which John skipped the class'

Second, there are some sentences for which no topicalization involving a certain constituent is possible at all. Examples are (24a) and (25a). Both are ungrammatical no matter what particle we may attach to the fronted constituents. In fact, there are no plausible 'source' sentences for (24b) or (25b), as shown in (24a) and (25a).¹⁰

⁹ Kuno doesn't make claims about Korean. But the relevant points in Japanese remain more or less the same in Korean.

¹⁰ A clarification is in order at this point. There are two types of topics in Japanese (cf. Kuno 1973), which take the same topic marker: a contrastive topic and a thematic topic. A contrastive topic can appear in embedded clauses and non-clause-initial positions. A sentence with a contrastive topic sounds incomplete if the sentence is uttered in isolation. On the other hand, a thematic topic can appear only clause-initially. Also it cannot appear in embedded clauses. Kuno (1973) is concerned only with thematic topics when he claims existence of correlation between topicalization and relativization. The same kind of distinction between two types of topics are attested in Korean. Thus, I will be concerned with thematic topics. If (25a) is uttered in a series such as 'As for that leftover, ... and as for this leftover, ...', i.e. if the topic is contrastive, it is somewhat more acceptable. (24a) does not seem to be

- (24) a. *I naymsay-nun, komwu-ka thanta.
 this smell-top rubber-nom burn
 (int.) 'This smell, rubber is burning.'
- b. [komwu than UN] naymsay
 rubber burn REL smell
 'the smell that characterizes burning of rubber'
- (25) a. *I ccikkeki-nun, wuli-ka achim-ul mekesse.
 this leftover-top we-nom breakfast-acc ate
 (int.) 'These leftovers, we ate breakfast.'
- b. [wuli-ka achim-ul mek UN] ccikkeki
 we-nom breakfast-acc ate REL leftover
 'the leftovers which came from our having breakfast'

Third, there is a type of RC called hydra relatives which have more than one head, as shown in (26a). The head nouns are a coordination of a 'complement' and an 'adjunct', descriptively speaking. This type of construction is hard to explain if we assume the correlation between topicalization and relativization. (26a) is perfect, whereas its counterpart topic sentence (26b) is ungrammatical regardless of the presence of an appropriate particle before the topic marker. Consequently, this constitutes another argument against the suggested correlation.

- (26) a. [mwulken-ul hwumchi UN] salam-kwa cangso
 goods-acc stole REL person-and place
 'the person; that stole the goods and the place that he; stole the goods'
- b. *John-kwa sicang-(eyse-)nun, mwulken-ul hwumchyesse.
 John-and market-(at-)top goods-acc stole
 (int. truth-conditionally) John stole the goods at the market.'

Finally, the examples in (27) are all grammatical. But the denotation of the time adverbial *taum nal* 'next day' in (27c) is different from the others. While *taum nal* is cotermporal with the time of my friend's departure in (27a) and (27b), the one in (27c) refers to the day which is one day after my friend's departure.¹¹ As a result, this cannot be explained by a hypothesis that (27c) is derived from (27b).

- (27) a. Chinkwu-ka taum nal ttenassta.
 friend-nom next day left
 'My friend left the next day.'
- b. Taum nal-un, chinkwu-ka ttenassta.
 next day-top friend-nom left
 'The next day, my friend left.'
- c. [chinkwu-ka ttena UN] taum nal
 friend-nom left REL next day
 'the day after my friend left'

ameliorated even in this way. I consider the two kinds of topics to be treated separately. Hence, I will not discuss contrastive topical readings.

¹¹ It is possible for (27c) to refer to 'the day after (some other contextually salient event) when my friend left'. This is a nonrestrictive relative clause in this reading. But my point is that the reading in (27c) has the same relative clause structure but lacks a corresponding topic sentence.

Based on the discussion in this section, I conclude that the four types of examples given above cast doubt on the suggested correlation between topicalization and relativization. Given the differences that we have discussed, any similarities between them simply reflect their overlapping functions, as Na (1986) claims. In the next section, I will propose an approach which does not posit a gap in an RC.

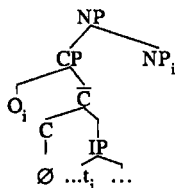
5 A Gapless Approach

5.1 Is There a Gap in RCs?

As I noted in section 2, there are some RCs in Korean which cannot easily be explained by adapting typical analyses of English RCs. This subsection will discuss some examples for which gapped analyses seem unavailable and will provide a basis for formulating a gapless analysis of Korean RCs.

At this point let us reconsider the analysis in (6b), repeated here. This analysis was assumed in Section 3 for the RC structure in (7), repeated below.

(6) b.



- (7) John-i [[__ na-lul salangha-n UN] yeca-lul] man-nasse.
 John-nom I-acc love-pres REL woman-acc met
 'John met a woman who loves me.'

This is essentially the standard GB analysis for non-wh relatives like (28) below, except that Korean is a head-final language so that the head noun follows the RC. The sentence (28) by itself does not provide any argument for or against movement of the empty operator as analyzed in (6b). There is another seemingly plausible analysis for (28) as in (29a). In (29a) the coindexing occurs between the head noun *the man* and the empty category *in situ*.

(28) I know the man that John will invite.

- (29) a. I know the man_i [that [John will invite e_i]]
 b. I know the man_i [O_i that [John will invite t_i]]

In fact, the movement analysis of the empty operator is not motivated if we consider only this type of examples. However, it is argued in Chomsky (1977), Haegeman (1991), and Cowper (1992) that the analysis in (29b) is favored because of examples like (30). They show the subadjacency effect which is considered to be a diagnostic for movement. In other words, if the RC in (28) were a simple coindexing *in situ* as in (29a), we would expect the sentences in (30) to be good, because there is nothing in the theory to prevent a coindexing between two NPs in these environments. For example, the coindexing of the NPs in (31) is licensed in these environments.

However, if we adopt the analysis of (29b) and propose movement of the empty operator, we can explain by subadjacency why the sentences in (30) are not acceptable. The ungrammaticality in (30) is predicted under this analysis, because the empty operator needs to move to [Spec, CP]. The movement has to cross two bounding nodes as shown in (30'). As a result, the grammaticality judgement and the movement hypothesis in (29) and (30) are consistent.

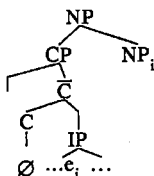
- (30) a. *This is the man that John made the claim that he will hire e.
 b. *This is the man that John told me when he will hire e.
 c. *This is the man that John visited me after e left.
 d. *This is the man that a lady that taught e was disappointed.

(31) The man_i made a claim that Mary told Sue that she will hire him_i.

(30')
 * ... the man [_{CP} O_i that [John ... the claim that ... t_i]]

Now recall that RCs in Korean are generally not subject to subadjacency as shown in (10), (11), and (12) above. Then, there is no theoretical superiority of (6b). Movement analysis of (6b) is, rather, unmotivated in Korean. Thus, (32) is a better analysis for the RC in (7) than (6b) is. This analysis doesn't require any syntactic dependency in the RC. The only condition that is required appears to be that the head noun and an empty category are coindexed.

(32)



If we consider the nature of the type of empty categories in (7) and (32) in GB terms, they cannot be NP-traces because they are case-assigned. They cannot be wh-traces because they are not subject to subadjacency as shown in (10), (11), and (12) above. They cannot be PRO because they are in a governed position. The only type of empty category possible is *pro*, if we consider the fact that Korean has object *pro* as well as subject *pro*. Consequently I assume that they are *pro*'s.

Up to this point, it has been shown only that there is no movement necessary for RCs in Korean. But it has not been shown clearly yet whether *pro* is a necessary component of RCs. Now the real question is, is it necessary for an RC to have *pro* which is coindexed with the head noun? If *pro* were necessary in an RC, then the only relevant difference in RCs between Korean and languages like English would be that Korean has *pro* in the place of a wh-trace in English. As it turns out, however, a genuine difference lies in the fact that there are RCs which don't have a gap, not even *pro*.

If the argument against gaps in RCs above is syntactic, the following argues against gapped analyses from a semantic point of view. Consider once again the examples from (13) above, repeated here. These RCs lack an apparent gap that we would find in an ordinary RC structure in English. We have seen that we cannot posit a gap in the topic positions of these examples because their topicalized counterparts are ungrammatical (cf. (24) and (25)).

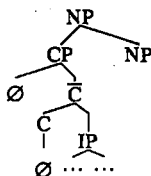
- (13) a. [ai-ka wun UN] soli
 baby-nom cry REL sound
 'the sound that characterizes a baby's crying'
- b. [wuli-ka achim-ul mek UN] ccikkeki
 we-nom breakfast-acc ate REL leftover
 'the leftovers that came from our having breakfast'
- c. [John-i kom-ul cwuki UN] sichey
 John-nom bear-acc killed REL corpse
 'the corpse that came from John's killing the bear'
- d. [thayphwung-i cinaka UN] huncek
 typhoon-nom passed.by REL debris
 'the debris that resulted from a typhoon's passing'
- e. [komwu than UN] naymsay
 rubber burn REL smell
 'the smell that characterizes burning of rubber'

The RC involving time adverbials was also mentioned in section 4, and we noticed that they are problematic when we compared (27b) with (27c), repeated below, because the meanings are different. As a result, we cannot assume a gap in the RC of (27c), either.

- (27) a. Chinkwu-ka taum nal ttenassta.
 friend-nom next day left
 'My friend left the next day.'
- b. Taum nal-un, chinkwu-ka ttenassta.
 next day-top friend-nom left
 'The next day, my friend left.'
- c. [chinkwu-ka ttena UN] taum nal
 friend-nom left REL next day
 'the day after my friend left'

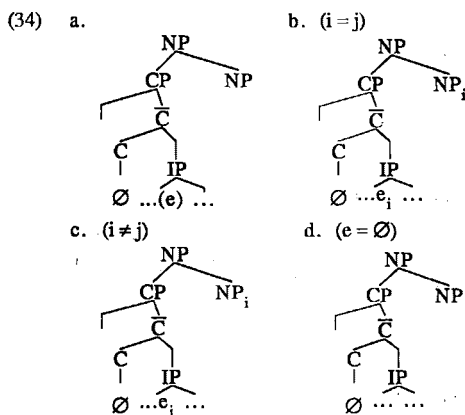
Thus, I hypothesize that there is no gap, not even in the topic node, in RC constructions like (27) and (13). Consequently, there is no necessary coindexing between the head noun and some constituent in the RC. As a result, an analysis for those structures should be something like (33), rather than (ia) in footnote 6 above.

(33)



We are apparently left, then, with two types of RC constructions which appear to have two different generative mechanisms: (i) English-type RCs, with coindexing of the head noun with *pro in situ*, and (ii) Korean-type RCs which have no coindexing. A question then arises. Are they really two generatively distinct structures? The answer is no. Examining the two tentative analyses of the two types of RCs, we seem to be able to incorporate the two analyses into one.

Let us take another look at (32). The empty category is a pronominal. Is it really necessary that the head noun and a pronominal should be coindexed? It seems not. Suppose that (34a) is an analysis for all RCs in Korean. If the RC contains *pro* coindexed with the head, (34a) is instantiated as (34b). If the RC contains *pro* not coindexed with the head, it is instantiated as (34c). And if there is no *pro*, the RC is instantiated as (34d). (34b) is the same as (32); (34c,d) are instantiations of (33) above.



As a result, (34a) seems to serve as an appropriate analysis for both types of RCs in Korean. My proposal is that syntax allows any structure like (34) as candidates for RCs but that pragmatics provide conditions on possible RCs. This pragmatic issue will be addressed in Section 6.

5.2 Modification without a Gap

It has been a normal practice in the linguistic literature to relate a nominal to a gap in a clause that restrictively modifies it. Now I will consider how to get the semantics right without positing a gap in a relative clause. I will follow Larson's (1983:107-137) line of argumentation in this regard.

Larson (1983) separates 'reason relatives' like (35) from other adverbial relatives and proposes a structure like (36) for the reason that reason relatives have some idiosyncratic properties.¹²

¹² Larson observes that reason relatives of all the adverbial RC constructions show the most limited and the most idiosyncratic distributional patterns.

First, *why* RCs accept as heads a very limited class of nominals, i.e. those headed by the noun reason:

- (i) the reason (*design/*cause/*motive/*purpose) why Mary punched Bill

This is in strong contrast with other adverbial RCs. For example, *when* RCs allow as heads any nominals which can be reasonably construed as referring to times, as shown in (ii):

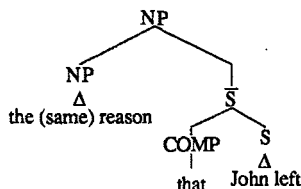
- (ii) the vacation (occasion/month/day) when you traveled to Madison

Second, there are no *wh*-PPs which are both acceptable and yield the same semantics as *why*. (iii) shows the contrast between reason RCs and other adverbial RCs:

- (iii) a. the reason why (?*because of which/?for which) Mary punched Bill

(35) I left for [NP the (same) reason that John left.]

(36)



The sentential complementizer *daß* in German differs from its English counterpart *that* by being unable to introduce RCs. Consider the sentences below. The complementizer *that* can be used in a RC in English. However, this is not acceptable in German as shown in (37b,c). A complementizer combines with a sentence without a gap as in (37a) and (38).

(37) (= Larson's (98))

- a. Hans sagte [daß er krank war]
'Hans said that he was sick.'
- b. ein Mann { *daß
 den } ich gesehen hatte
'a man who I had seen'
- c. der Ort { *daß
 wo } er wohnt
'the place where he lives'

(38) (= Larson's (99))

- die Tatsache daß die Welt rund ist
'the fact that the world is round'

(39) (= Larson's (100))

- der Grund { daß
 warum } Hans weggangen ist
'the (same) reason { that
 why } Hans left'

There is an exception to this general property of the German complementizer *daß*. Namely, *daß* is allowed just for reason relatives in German as in (39). Larson concludes from these that reason relatives as in (35) have the same structure as that of complex NP complements like (40), which are gapless.

(40) I realized [the fact that linguistics can be fun].

-
- b. the vacation when (on which/during which) you traveled to Madison
 - c. the place where (at which/on which/ near which) you live

Third, reason RCs are exceptions to the correlation between what can appear as the head of a *that/that*-less RC and what can appear as a bare-NP adverb. The correlation shown in (iv) is in contrast with (v).

- (iv) a. the way/*manner (that) you pronounce my name b. You pronounced my name that way/*manner.
- c. the direction/*course (that) we were traveling d. We were headed that direction/*course.
- (v) a. the reason (that) Mary punched Bill
- b. *Mary punched Bill that reason.

Also notice that gaps are not a general prerequisite for restrictively modifying clauses. Even though *before the boss returns* and *red* restrictively modify their head in (41) and (42), we don't usually analyze them as each having a gap, but by uniformity we would have to.

- (41) every Tuesday { before the boss returns
since John has been away
after you left }

- (42) red apples

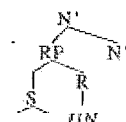
Now if we accept that English and German have gapless relative constructions which are limited to reason relatives, we could generalize this special case in these languages into all the relative constructions in Korean. Consequently I conclude based on the discussion thus far that a RC in Korean requires neither a gap nor coindexing.

5.3 An HPSG Analysis

So far I have used GB notations and terminology for expository purposes in arguing against the movement and gap approach which is typical of GB. I will adopt the HPSG framework for three reasons. First, we have seen that a configurational syntactic theory based on movement and gap analysis is not adequate for the Korean data. Second, since there is no coindexing required in the RCs in Korean, a rule of predication is not appropriate for the data. Third, we obviously need the notion of 'relativizer' which contains as part of its lexical meaning semantic constraints that will make RCs appropriate. And relativizers are a notion that is well established in HPSG.

As a crucial component in Korean RCs, I propose a relativizer *UN*, though it has been implicit thus far. This relativizer mediates between a RC and its head noun in the same way Pollard and Sag's (in press) null relativizers do. A simplified RC structure in this analysis is represented in (43):

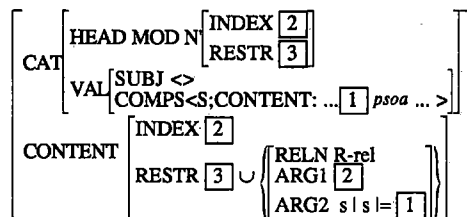
- (43) RC structure in Korean¹³



The relativizer *UN* is the head of RP, subcategorizing for a sentential complement. Then RP in turn modifies *N'*. Adopting Pollard and Sag's (in press) HPSG framework, I give a simplified SYNSEM value of the lexical entry for the relativizer *UN* below in (44):

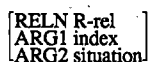
¹³ I adopt the adjunction of RC to *N'*, rather than NP, for semantic reasons along the lines of Parice (1975).

- (44) SYNSEM value of the relativizer UN:¹⁴



The relationship between an RC and its head noun is unspecified in SYNSEM. In order to account for this unspecification, I propose a parameterized state of affairs (*psoa*) *R-relation* as in (45). In *R-relation*, ARG1 has an index as argument, but ARG2 has as its argument a situation that supports the *psoa* which is the *CONTENT* value of its RC (or the *CONTENT* value of an embedded clause of its RC in the long-distance RC construction such as (65) below). *R-relation* is a relation parameter that is anchored by the utterance context. Therefore, many different relations can be instantiated as *R-relations* depending on the given context. This will be also addressed in the next section.

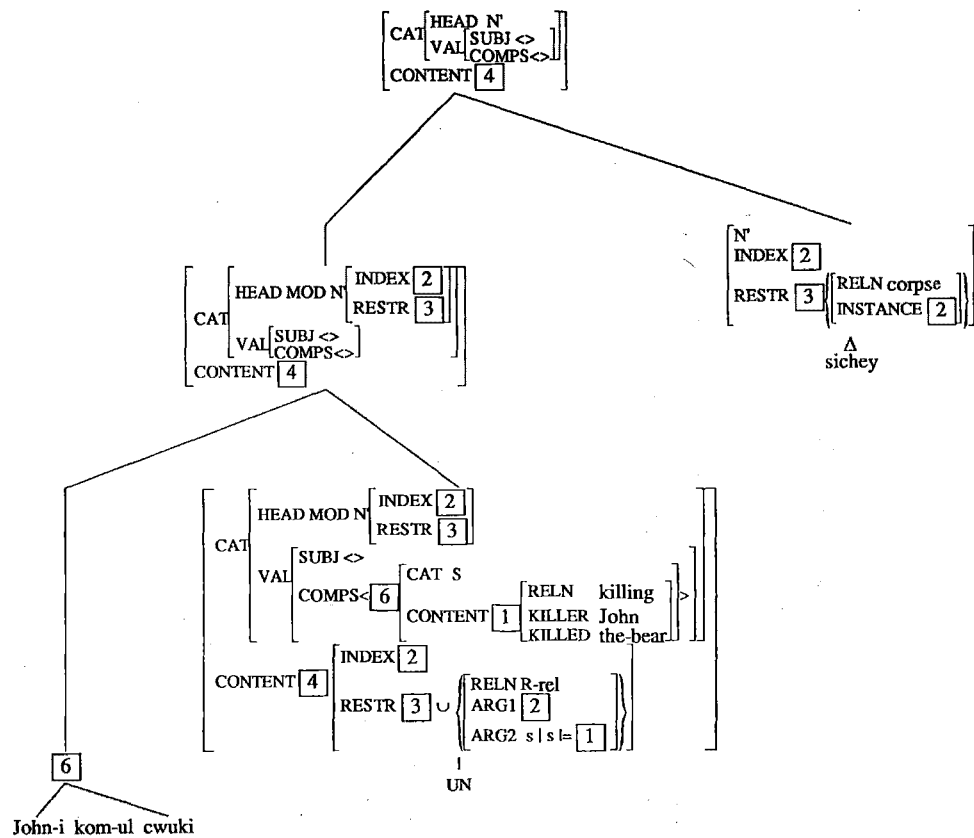
- (45) A parameterized state of affairs: *R-relation*



Now, I will show how we generally represent a RC in this analysis. (46) is a simplified partial feature description of an RC (13c), repeated here.

- (13) c. [John-i kom-ul cwuki UN] sichey
 John-nom bear-acc killed REL corpse
 'corpse that came from John's killing the bear'

¹⁴ The parameter *s* for a situation as the value of ARG2 must be an unabsorbed parameter at the level of the N' content.



6 Semantics of RCs¹⁵

Given the lexical entries of the relativizer *UN* in (44) and (46), whether or not a given RC construction is acceptable depends solely on *R-relation*. In this subsection, I will discuss semantic differences between English and Korean RCs and spell out the conditions in which an *R-relation* holds properly so that it leads to an acceptable RC construction in Korean.

For expository purposes, I will discuss the matter in a Montague-style framework with the addition of a version of Neo-Davidsonian Event Semantics adapted by Parsons (1980), instead of the Situation Semantics framework with which HPSG is most compatible. It seems that we can address the issues at hand in this way, because the notion of situation in Situation Semantics appears to be compatible with the notion of eventuality in Event Semantics.¹⁶

The intuitive idea of RCs, which goes back to Quine (1960), is that the head noun is characterized by its RC in a relative clause construction. Montague's (1973) PTQ analysis gives the semantic value (47b) to the expression (47a). Montague himself is not explicit about whether a free variable is required for an RC in English. Hence, PTQ in principle allows expressions such as (48). However, most linguists seem to rule out expressions like (48), where there is no free variable *x* in the RC. Higginbotham (1984) asserts that they are ungrammatical due to a prohibition of vacuous quantification. Chomsky (1982, 11) uses this type of example to suggest that prohibition of vacuous quantification is a principle on the syntax of LF in natural languages, as part of Universal Grammar.

- (47) a. person that John met
(in fact, *person such that John met him* in PTQ)
- b. $\lambda x[\text{person}'(x) \ \& \ \text{met}'(j, x)]$
- (48) a. *man who John saw Bill
 $\lambda x[\text{person}'(x) \ \& \ \text{saw}'(j, b)]$
- b. *book that it rains
 $\lambda x[\text{book}'(x) \ \& \ \text{rains}']$

Chomsky's generalization seems to be wrong for Korean RCs. Let us take an example. The Montague-style representation of the meaning of (13c) above is (49b) below. In (49b) what the relative clause in (49a) amounts to is the underlined portion. There is no free variable *x* in this portion.

- (49) a. [John-i kom-ul cwuki UN] sichey
 John-nom bear-acc killed REL corpse
 'corpse that came from John's killing the bear'
- b. $\lambda x[\text{corpse}'(x) \ \& \ \underline{\exists e[\text{killing}(e) \ \& \ \text{AGENT}(e, j) \ \& \ \text{THEME}(e, \text{the-bear})]}] \ \& \ R\text{-rel}(e, x)]$

Instead of a free variable in an RC, Korean requires a nonsyntactic *R-relation* which holds between an eventuality in an RC and its head noun. This *R-relation* is of a pragmatic nature in that a given context determines its value. It is a relation parameter which is instantiated as a specific relation in

¹⁵ Craige Roberts suggested to me that the relation in Korean-type RCs be between the head and the event that the RC describes, when I was not quite sure about that. This suggestion was crucial to the development of the theory.

¹⁶ I will use 'eventualities' as a cover term for states, processes, and events, as Bach (1986) does. Also, for simplicity, I will frequently omit eventuality arguments when unnecessary.

a given context. It is also in part semantic in the sense that a certain predicate makes certain *R-relations* available as part of its lexical meaning.

Thus the ways head nouns are characterized in RCs may be different from language to language, contrary to the common assumption about the semantics of RCs. For instance, English requires that there be a tight syntactic relation involving filler-gap dependencies, while Korean doesn't require a syntactic dependency to the same degree. This nonsyntactic nature of binding in Korean RCs is really what makes Korean 'cool', whereas the syntactic dependencies in English RCs make English 'hot'.

If we compare (49) with (18d), repeated below, we come to realize that there is something more to be said than just concluding that Korean RCs are a pragmatic matter. In almost all contexts, (49) is good, while (18d) is unacceptable. What such examples suggest is, then, that while we only need some appropriate nonsyntactic relation between an RC and its head noun, the question of what appropriate means needs to be addressed here.

- (18) d. *[Mary-ka ka UN] salam
 Mary-nom went REL person
 'person such that Mary went'

I propose that a relation between an RC and its head noun is appropriate if it is familiar and salient in the discourse. More specifically, the relation must be familiar in the sense of the Familiarity Condition of Heim (1982) and salient in the common ground of discourse. Consequently, I provide (50) as the condition for acceptable RCs in Korean:

- (50) Condition for *R-relations* in Korean:
R-relations must be familiar and maximally salient

The condition (50) allows (49), as we want it to. Normally, if someone kills a bear, then the bear becomes a corpse. As a result, there exists a familiar *R-relation* which holds between 'killing a bear' and a corpse. On the other hand, the condition (50) is not satisfied in (18d), because 'to go' doesn't typically involve a third person who is not the agent. In this way we can explain from (50) that (18d) is an unacceptable RC construction.

At this point I propose in (51) below a partial inventory of familiar relations which can make *R-relations* in RCs appropriate.

- (51) (Partial) Inventory of Potential Familiar Relations:
 {AGENT, THEME, LOCATION, SOURCE, GOAL, TIME, INSTRUMENT,
 REASON, CAUSE, BENEFICIARY, RESULT, SIGN, METHOD, TOPIC}

I assume without discussion that if an eventuality occurs, unique instances will ensue for some or all of the familiar relations in (51) such as its location, time, instrument, cause, method, and result, depending on the type of its predicate. For example, an eventuality of 'a person meeting someone' has relations with a time, location, reason, and method, but not normally with an instrument, whereas 'a person stabbing someone' implies some relation with a time, location, cause, method, and instrument. Also an eventuality is assumed to have a familiar relation of *RESULT* with a resulting entity if its predicate typically brings one about. For example, a person killing an animal has a relation with a corpse.

(52) below is the Korean counterpart of (47) above. Comparing (52) with (47), we notice that nothing in the formula in (52b) requires that the head noun be coindexed with the *pro* in the RC. The only requirement is that there be a familiar *R-relation* between the person *x* and the event that

the RC describes. I propose the coindexing process between *x* and *x'* as follows. There are several candidates for *R-relation* between *x* and *e*, e.g. AGENT, THEME, REASON, etc. A person is not usually considered as a reason for an event of meeting in a normal context. Therefore, it is not familiar and salient enough in that context. AGENT and THEME are familiar and salient enough for such an event with a transitive verb. There is only one free variable *x'* in the RC in (52a), which has the THEME role of the event. Thus, *x'* is eventually coindexed with *x*, assuming that thematic roles are unique (cf. Chomsky (1981)). In fact, this is the only way the RC in (52a) is licensed in a normal context under the condition (50). This results in coindexing of *x* and *x'*. Eventually, it leads to (52c) as one, probably the only in most contexts, instantiation of *R-relation*.

I will assume that a full NP cannot be coindexed with another full NP for a pragmatic principle that one should 'be as explicit as the conditions permit' (Reinhart 1983:76)¹⁷. This principle will rule out (53a) essentially in the same way it rules out (53b). Notice that Principle C of HPSG cannot rule out (53b), nor can Condition C of the standard GB binding theory if we assume that the *when*-clause is a sentential modifier.

The condition (50), together with this principle, rules in (54a) but rules out (54b): (54a) is licensed as we have seen above, because *salam* 'person' is related with the event of meeting as a familiar relation of THEME; on the other hand (54b) is not, because there is no familiar relation available between *salam* 'person' and John's meeting Mary. In other words, we don't usually assume that if a person x meets a person y, this eventuality has any regular relationship with a person z.

Now let's reconsider (23c), (22c), (13e), (13b), (26a), repeated in (55) in that order. None of the RCs in (55) can be accounted for in Kuno's approach or in an English-type analysis as we have seen in the previous sections.

- (55) a. [John-i kyelsekha UN] yenghwa
 John-nom was.absent REL movie
 'the movie for which John skipped the class'
- b. [Mary-ka John-ul ccilu UN] khal
 Mary-nom John-acc stabbed REL knife
 'the knife with which Mary stabbed John'
- c. [kornwu than UN] naymsay
 rubber burn REL smell
 'the smell that characterizes burning of rubber'
- d. [wuli-ka achim-ul mek UN] cikkeki
 we-nom breakfast-acc ate REL leftover
 'the leftovers which came from our having breakfast'
- e. [pro mwulken-ul hwumchi UN] salam-kwa cangso
 goods-acc stole REL person-and place
 'the person; that stole the goods and the place that he; stole the goods'

They can all be explained in my analysis; (55a) is ruled in, because the head noun is in an appropriate relation with the eventuality. Namely the head noun is the CAUSE of the eventualities. The R-relation in (56) is familiar because a cause always seems to be presupposed when we talk about an eventuality. It is easy to consider an exciting movie as a cause of someone's skipping school. Therefore, this appropriate relation between the RC and its head noun licenses (55a).

- (56) R-rel(a movie, John-skipped-the-class)

(55b) is ruled in, because the head noun is in a relation with its RC as the instrument. This is shown in (57a). A knife has a natural relation with an eventuality of someone's stabbing someone else. But this kind of relation may not hold if we have an RC construction like (57b), in which the head noun is a bagel. The entity denoted by the head noun must be a sharp object in order to have an appropriate relation with the RC like (55b). A knife can serve such a purpose, but a bagel cannot. Therefore a bagel cannot stand in an R-relation in (57c) to a stabbing event as an instrument:

- (57) a. R-rel(a knife, Mary-stabbed-John)
- b. *[Mary-ka John-ul ccilu UN] bagel
 Mary-nom John-acc stabbed REL bagel
 'bagel such that Mary stabbed John'
- c. *R-rel(a bagel, Mary-stabbed-John)

(55c) is ruled in because the typical smell characterizes an event of rubber burning as one of its SIGNS. (55d) is ruled in because the eventuality typically brings about entities like those denoted by the head noun. Thus, the relations in (58) are appropriate in the sense that its smell characterizes rubber burning and having a meal normally produces leftovers.

- (58) a. SIGN(smell, Rubber-is-burning)
- b. RESULT(leftovers, We-had-breakfast)

(55e) is ruled in because the first conjunct of the head noun phrase is related to the RC as AGENT of the eventuality and the second conjunct is related as a place to the RC as shown in (59).

- (59) a. AGENT(person, stealing event)
 b. LOCATION(place, stealing event)

It should be noted that the notion of familiar relation is situated in a context. This entails that there could be differences in acceptability of RCs in different contexts. This is exactly the case. In a normal context, for example, (60) below is not acceptable. This can be explained, because at least out of the blue, it seems that the head noun is not appropriately related to the RC. Even though it may be true that the event occurred in some kind of weather, it appears not to have a salient and familiar relation with it. However, if it is uttered in a rich context where John is seasonally depressive and homicidal, it is acceptable. In this case, the weather can be identified as being in an R-relation to the RC: the weather functions as CAUSE. In this rich common ground, the weather is closely related with John's behavior. Therefore, it is a familiar relationship with an event involving John as an agent.

- (60) a. [John-i Tom-ul ccilu UN] nalssi
 John-nom Tom-acc stabbed REL weather
 'weather under which John stabbed Tom'
 b. CAUSE(weather, John-stabbed-Tom)

This line of explanation can be extended to cover most examples. Take for example (18d) above, repeated below. We judged it as unacceptable in a normal context. Now, let us provide an enriched context so that each person in the domain has to go to some place for someone. And suppose that John went for Tom and that Mary went for someone else. In this context, (18d) is an acceptable RC. In other words, the R-relation in (61) is one of BENEFICIARY which is familiar in the context.

- (18) d. *[Mary-ka ka UN] salam
 Mary-nom went REL person
 'person such that Mary went'
 (61) BENEFICIARY(person, Mary-went)

Likewise, (57b) is acceptable if we assume a context where Mary stabbed John because they had a big fight over a bagel. In this case, the R-relation in (57c) is one of CAUSE. In view of this, the * marks in the examples above should be understood as indicating their unacceptability in a normal context, since, after all, most examples can be ameliorated if we enrich their contexts.¹⁸

In this way the condition (50) appears to cover the full range of examples in RC constructions. Let me illustrate some derivations of RC constructions. In the current semantic framework, one obvious way to get the semantics right appears to be the following. I propose schematically that the relativizer *UN* has the denotation (62). The relativizer functions as abstracting over eventuality variables when it combines with an RC. Then, it in turn combines with the head noun. This is illustrated in (63) for Korean-type RC like (49) and in (64) for an English-type RC like (52a). The variable *p* in (62) ranges over sets of eventualities in a similar way that a sentence is given a type temporal abstracts in Stump (1985: 105).

- (62) $UN: \lambda p \lambda Q [\lambda x [Q(x) \ \& \ \exists e [p(e) \ \& \ R-rel(e, x)]]]$
 (cf. Types(extensional): $Q: \langle e, t \rangle, x: \langle e \rangle, p: \langle e, t \rangle$, a variable over sets of eventualities)

¹⁸ Therefore, it is not a matter of grammaticality but of acceptability that is at stake here in Korean RCs. To be precise, * should be replaced by #. But since I opened the exposition with grammaticality judgements compared to English, I will keep the notations as they are.

- (63) [[John-i kom-ul cwuki UN]
John-nom bear-acc killed REL
:λpλQ[λx[Q(x) & ∃e[p(e) & R-rel(e,x)]]](λe'[killing(e') & AGENT(e',John)
& THEME(e',the-bear)])
=>λQ[λx[Q(x) & ∃e[λe'[killing(e') & AGENT(e',John) & THEME(e',the-bear)](e)
& R-rel(e,x)]]
by λ-conversion
=>λQ[λx[Q(x) & ∃e[killing(e) & AGENT(e,John) & THEME(e,the-bear)
& R-rel(e,x)]]
by λ-conversion
[[John-i kom-ul cwuki UN] sichey]
John-nom bear-acc killed REL corpse
'corpse that came from John's killing the bear'
:λQ[λx[Q(x) & ∃e[killing(e) & AGENT(e,John) & THEME(e,the-bear)
& R-rel(e,x)]]] (corpse')
=> λQ[λx[corpse'(x) & ∃e[killing(e) & AGENT(e,John) & THEME(e,the-bear)
& R-rel(e,x)]]]
by λ-conversion
=> λQ[λx[corpse'(x) & ∃e[killing(e) & AGENT(e,John) & THEME(e,the-bear)
& RESULT(e,x)]]]
by instantiation of R-rel
- (64) [[John-i pro manna UN]
John-nom met REL
:λpλQ[λx[Q(x) & ∃e[p(e) & R-rel(e,x)]]](λe'[meeting(e') & AGENT(e',John)
& THEME(e',x')])
=> λQ[λx[Q(x) & ∃e[λe'[meeting(e') & AGENT(e',John) & THEME(e',x')](e)
& R-rel(e,x)]]]
by λ-conversion
=> λQ[λx[Q(x) & ∃e[meeting(e) & AGENT(e,John) & THEME(e,x') & R-rel(e,x)]]]
by λ-conversion
[[John-i pro_i manna UN] salam_i]
John-nom met REL person
'person who John met'
:λQ[λx[Q(x) & ∃e[meeting(e) & AGENT(e,John) & THEME(e,x')
& R-rel(e,x)]]] (person')
=>λx[person'(x) & ∃e[meeting(e) & AGENT(e,John) & THEME(e,x') & R-rel(e,x)]]
by λ-conversion
=>λx[person'(x) & ∃e[meeting(e) & AGENT(e,John) & THEME(e,x')
& THEME(e,x)]]
by instantiation of R-rel (as one of the possibilities)

are an abstraction over eventuality variables in the matrix clause, the relation between a head noun and the eventuality of an embedded sentence cannot be captured in the way proposed in (62) - (64). For this reason, we need some way to get an access to an embedded clause and match it with the head of the RC.

- (65) [John-i [Mary-ka ttenass-tako] malha UN] iyu
 John-nom Mary-nom left-comp said REL reason
 'reason that John said Mary left'

In Yoon (in progress) I attempt to provide a semantic account for data like (65) in the framework of Dynamic Montague Grammar.

7 A Problem to Resolve

There is a possible problem to resolve which arises from adopting my analysis. Observe that a sentence like (66) is not acceptable. Nothing appears to rule out this structure in my analysis.

- (66) ??[ku_i-ka ka UN] salam_i
 he-nom went REL person
 'person who went'

I have proposed that a relative clause does not have a gap. Then it follows automatically that an empty category in a RC must be *pro*. Then, *kan salam* 'person who went' must be analyzed as in (67).

- (67) [pro_i ka UN] salam_i
 went REL person
 'person_i that he_i went' = 'person who went'

If we assume that *pro* and an explicit pronoun are always compatible in a pro-drop language such as Korean, we face a problem. The oddity of (66) is unexpected according to our theory, because the head noun and the pronoun are supposed to be syntactically independent. (66) is minimally different from (67): the only change made in (67) is that the pronoun is now explicit. An example like (66), being unacceptable, appears to dispute my claim that the empty category in a RC is *pro*. This example might appear to support a gapped approach to RCs.

However, consider (68) and (69) below. The relation between them is analogous to the relationship between (66) and (67) inasmuch as the sentences in (69) result from replacing *pros* in (68) by overt pronouns. What they show is that a sentence with *pro* is not always the same in grammaticality as a sentence in which an explicit pronoun replaces *pro*. Namely, (69a) and (69b), both ungrammatical, are the corresponding sentences with explicit pronouns of (68a) and (68b), respectively. Now, the contrast between (66) and (67) seems not very surprising. It seems that what we have to do is discard the assumption that *pro* and overt pronouns have exactly the same distribution.¹⁹

¹⁹ Incidentally, as mentioned above, there is a gap possible in environments like (i) and (ii) where subadjacency would block an extraction, such as in a complex NP and in a subject. Now the gaps here are considered to be *pro* in my analysis. Its explicit counterpart is optional when *pro* is embedded.

- (i) [[s (kukes_i-ul) poko nase] hwacangsil-ey kalswu epsnu UN] yenghwa_i
 it-acc see after restroom-to can.go not REL movie
 'movie_i that you can't go to restroom after you watch it_i'

- (68) a. John_i-i tochakha camaca, pro_i phyenci-lul ponayssta.
 John-nom arrive as.soon.as letter-acc sent
 'As soon as he_i arrived, John_i sent a letter.'
- b. pro_i tochakha camaca, John_i-i phyenci-lul ponayssta.
 arrive as.soon.as John-nom letter-acc sent
 'As soon as he_i arrived, John_i sent a letter.'
- (69) a. ??John_i-i tochakha camaca, ku_i-ka phyenci-lul ponayssta.
 John-nom arrive as.soon.as he-nom letter-acc sent
 'As soon as he_i arrived, John_i sent a letter.'
- b. *Ku_i-ka tochakha camaca, John_i-i phyenci-lul ponayssta.
 he-nom arrive as.soon.as John-nom letter-acc sent
 'As soon as he_i arrived, John_i sent a letter.'

Moreover, most speakers find (70) acceptable. (70) contrasts with (66) and (67) in grammaticality. If we conclude from (66) and (67) that the empty category in (67) is in fact a wh-trace because an overt pronoun is not allowed in (66), then we have to conclude in the same logic that the empty category in (70b) is *pro*. Since (67) and (70b) have exactly the same structure, it is not convincing to argue that they have different types of empty categories.

- (70) a. [caki_i-ka caki_i-lul phamyelsikhin UN] salam;
 self-nom self-acc destroy REL person
 'person who destroys himself'
- b. [pro_i caki_i-lul phamyelsikhin UN] salam;
 self-acc . destroy REL person
 'person who destroys himself'

Thus examples such as (66) do not necessarily undermine my analysis that empty categories in a RC are *pro*'s. However further research will be needed to establish the precise distributional differences between overt and empty pronouns. I suspect that some constraint would rule out sentences like (67) in the same way it would rule out sentences such as (69).

8. Conclusion

In conclusion, it was shown at the beginning that Korean-type RCs cannot be accounted for by the standard syntactic and semantic approaches available, both because syntactically they lack a syntactic gap and because semantically the relation between an RC and its head noun is not one that is directly describable in the popular approaches.

It was observed that the context plays a central role in Korean RCs, binding free *R-relations*. An analysis was proposed which involves no wh-trace or movement of empty operators. In this analysis, Event Semantics is incorporated to address and determine the discourse-bound *R-relation*.

Then, it is not a random fact that Korean, along with Chinese and Japanese, has this type of RCs, while English does not. I claim that this is just another manifestation of the general tendency of cool languages to depend more on the context for interpretations than hot languages like English do, in the same way that only cool languages allow zero pronouns.

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- (ii) [RC[RC (ku_i-ka) ipko issnu UN] yangpok-i telep UN] sinsa;
 he-nom wearing is REL suit-nom is.dirty REL gentleman
 'gentleman_i that the suit that he_i is wearing is dirty'

References

- Bach, Emmon and Robin Cooper. 1978. The NP-S analysis of relative clauses and compositional semantics. *Linguistics and Philosophy* 2, 145-150.
- Bach, Emmon. 1986. The Algebra of Events. *Linguistics and Philosophy* 9, 5-16.
- Chafe, Wallace. 1976. Givenness, contrastiveness, definiteness, subjects, topics and point of view. *Subject and Topic*, ed. by Charles Li. New York: Academic Press. 27-55.
- Chomsky, Noam. 1965. *Aspects of the Theory of Syntax*. Cambridge: MIT Press.
- Chomsky, Noam. 1977. On Wh-movement. *Formal Syntax*, eds. Culicover et. al. New York: Academic Press.
- Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.
- Chomsky, Noam. 1982. *Some Concepts and Consequences of the Theory of Government and Binding*. Cambridge: MIT Press.
- Chomsky, Noam. 1986. *Barriers*. Cambridge: MIT Press.
- Cooper, Robin. 1983. *Quantification and Syntactic Theory*. Dordrecht: Reidel.
- Cowper, Elizabeth. 1992. *A Concise Introduction to Syntactic Theory: the Government-Binding Approach*. University of Chicago Press.
- Haegeman, Liliane. 1991. *Introduction to Government and Binding Theory*. Cambridge: Blackwell Publishers.
- Heim, Irene. 1982. *The Semantics of Definite and Indefinite Noun Phrases*. Ph.D. dissertation. University of Massachusetts, Amherst.
- Higginbotham, James. 1984. English is not a Context-free Language. *Linguistic Inquiry* 15, 225-234.
- Huang, C.-T. James. 1982. *Logical Relations in Chinese and the Theory of Grammar*. Ph.D. dissertation, MIT.
- Huang, C.-T. James. 1984. On the Distribution and Reference of Empty Pronouns. *Linguistic Inquiry* 15, 531-574.
- Kuno, Susumu. 1973. *The Structure of the Japanese Language*. Cambridge: MIT Press.
- Larson, Richard. 1983. *Restrictive Modification: Relative Clauses and Adverbs*. Ph.D. dissertation, University of Wisconsin.
- McLuhan, 1964. *Understanding Media: The Extensions of Man*. New York: McGraw-Hill.
- Montague, Richard. 1973. Proper Treatment of Quantification in Ordinary English. *Approaches to Natural Language*, eds. Hintikka et al. Dordrecht: Reidel.
- Na, Younghee and Geoffrey Huck. 1993. On the Status of Certain Island Violations in Korean. *Linguistics and Philosophy* 16, 181-229.
- Na, Younghee. 1986. *Syntactic and semantic interaction in Korean*. Ph.D. dissertation. University of Chicago.
- Parsons, Terence. 1980. Modifiers and Quantifiers in Natural Language. *Canadian Journal of Philosophy*. Supplementary Volume VI, 29-60.
- Partee, Barbara H. 1975. Montague Grammar and Transformational Grammar. *Linguistic Inquiry* 6, 203-300.
- Pollard, Carl and Ivan Sag. 1987. *Information-based Syntax and Semantics, Volume 1: Fundamentals*. CSLI Lecture Notes Series No. 13. Stanford: Center for the Study of Language and Information.
- Pollard, Carl and Ivan Sag. in press. *Head-driven Phrase Structure Grammar*. University of Chicago Press.
- Quine, Willard. 1960. *Word and Object*. Cambridge: MIT Press.
- Reinhart, Tanya. 1983. Coreference and Bound Anaphora: a Restatement of the Anaphora Questions. *Linguistics and Philosophy* 6, 47-88.
- Ross, John. 1982. Pronoun Deleting Processes in German. Paper presented at the annual meeting of the Linguistic Society of America, San Diego, California.
- Stump, Gregory. 1985. *The Semantic Variability of Absolute Constructions*. Dordrecht: Reidel.

- Tagashira, Yoshiko. 1972. Relative Clauses in Korean. *The Chicago Which Hunt: Papers from the Relative Clause Festival*. Chicago Linguistic Society.
- Williams, Edwin. 1980. Predication. *Linguistic Inquiry* 11, 203-238.
- Xu, Liejiong and Terence Langendoen. 1985. Topic Structures in Chinese. *Language*. 61, 1-27.
- Xu, Liejiong. 1986. Free Empty Category. *Linguistic Inquiry* 17, 75-93.
- Yoon, Jae-Hak. in progress. The Semantics of Relative Clauses in Korean. Ms., OSU.
- Yoon, James H-S. 1987. Some queries concerning the syntax of multiple subject constructions in Korean. *Harvard Studies in Korean Linguistics II.*, eds. Kuno et al. Seoul: Hanshin Publishing Company.